

## A B S T R A C T

The invention provides a method of synthesizing a Si/C/N/E<sub>a</sub>/F<sub>b</sub>/G<sub>c</sub>/O multielement nanopowder that is directly  
5 suitable for sintering, E, F, and G representing three distinct metallic elements other than Si, and at least one of a, b, and c being non-zero. The nanopowder is obtained by laser pyrolysis of an aerosol comprising at least one metal precursor, hexamethyldisilazane Si<sub>2</sub>C<sub>6</sub>NH<sub>19</sub>, used as the sole  
10 solvent for said at least one metal precursor, and silane SiH<sub>4</sub>. Each grain of the resulting nanopowder contains all of the elements Si, C, N, E<sub>a</sub>, F<sub>b</sub>, G<sub>c</sub>, and O, and the chemical composition of the nanopowder in terms of equivalent stoichiometric compounds is such that its free carbon content  
15 is less than 2% by weight and its SiO<sub>2</sub> content is less than 10% by weight. The use of this nanopowder for fabricating a Si<sub>3</sub>N<sub>4</sub>/SiC composite ceramic.